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an umbilic ; their difference,  $\eta - \theta$ , has the direction of a cyclic normal ; another umbilicar vector being in the direction of the sum of their reciprocals,  $\eta^{-1} + \theta^{-1}$ , and another cyclic normal in the direction of the difference of those reciprocals,  $\eta^{-1} - \theta^{-1}$ . The lengths of the semiaxes of the ellipsoid are expressed as follows :

$$a = T\eta + T\theta ; b = T(\eta - \theta) ; c = T\eta - T\theta. \quad (2)$$

“ The focal ellipse is given by the system of the two equations

$$S \cdot \rho U\eta = S \cdot \rho U\theta ; \quad (3)$$

and

$$TV \cdot \rho U\eta = 2S\sqrt{(\eta\theta)} ; \quad (4)$$

where  $TV \cdot \rho U\eta$  may be changed to  $TV \cdot \rho U\theta$ ; and which represent respectively a plane, and a cylinder of revolution. Finally, I shall just add what seems to me remarkable,—though I have met with several similar results in my unpublished researches,—that the focal hyperbola is adequately represented by the *single* equation following :

$$V \cdot \eta\rho \cdot V \cdot \rho\theta = (V \cdot \eta\theta)^2. \quad (5)$$

In the same note to the Secretary, it was requested by Sir William R. Hamilton that the Academy might be informed of a theorem respecting the inscription of certain gauche polygons, in surfaces of the second degree, which he had lately communicated to the Council. This theorem was obtained by the method of quaternions, and included, as a particular case, the following:—“ If the first, second, third, and fourth sides of a gauche nonagon, inscribed in a surface of the second order, be respectively parallel to the fifth, sixth, seventh, and eighth sides of that nonagon, and also to the first, second, third, and fourth sides of a gauche quadrilateral, inscribed in the same surface ; then the plane containing the first, fifth, and ninth corners of the nonagon will be parallel to the plane

which touches the surface at the first corner of the quadrilateral."

More generally the theorem here referred to shews that for the inscribed quadrilateral we may substitute a gauche polygon with any even number,  $2n$ , of sides; and for the nonagon, another gauche polygon, with  $4n + 1$  sides, connected with that polygon of  $2n$  sides, by the same law of construction as that which had connected the nonagon with the quadrilateral; and that then the tangent plane to the surface at the first corner of the polygon of  $2n$  sides, will be parallel to the plane through the first, middle, and last corners ( $1, 2n + 1, 4n + 1$ ) of the polygon of  $4n + 1$  sides.

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The Secretary presented, from the Rev. W. C. Armstrong, an earthen sepulchral urn, found on the 17th of March last, in a field, part of Moydow glebe, county Longford; together with the jaw bone of a man whose skeleton was found near the urn. He also presented, from Mr. R. Hitchcock, a large stone-hammer, used by miners, and found near Killarney.

Several donations of books were also made to the Library, which will be found noticed in the Appendix.

Thanks were returned to the several donors.

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APRIL 23RD, 1849.

SIR WILLIAM BETHAM in the Chair.

Dr. Harvey made a communication respecting the nature of the Fructification of the Rhodospermatus Algæ.

"In the Rhodospermatus Algæ, or Floridææ, the fructification presents itself under two forms. *Two* sorts of reproductive bodies are produced by each species of these algæ, both sorts equally capable of germinating into a new plant, both, therefore, performing the functions of a *seed*. These repro-